



THE UNIVERSITY *of York*

Discussion Papers in Economics

No. 2007/28

The Impact of the Accession of the Western Balkan Countries
On Voting and Coalition Formation
within the European Council of Ministers

By

Eleni Mylona

Department of Economics and Related Studies
University of York
Heslington
York, YO10 5DD

The Impact of the Accession of the Western Balkan Countries on Voting and Coalition Formation within the European Council of Ministers

Eleni Mylona^{*}

Department of Economics and Related Studies[†]

University of York

Abstract

This paper looks into the impact the accession of the Western Balkan countries of Albania, Serbia, Montenegro, Croatia, Bosnia and Herzegovina, and FYROM would have on voting power in the EU Council. Particular attention is paid to the implications of a priori coalitions between member states. The Shapley-Shubik power index is used to estimate voting power and two scenarios are considered: accession under the Nice Treaty and the Reform Treaty rules. If the Western Balkans accede under the Nice Treaty rules then the efficiency and workability of the EU would deteriorate, although the “paradox of new members” might occur where the power of some existing members is increased. Conversely if the accession took place under the Reform Treaty rules then there would be little impact on the ability of the EU to act. The inefficiency of a priori coalition formation between countries of dissimilar size is revealed, as well as the likely occurrence of the “paradox of size” where some countries are made worse off through cooperation. The enlargement will not affect this.

^{*} Corresponding author (email: em505@york.ac.uk)

[†] This paper is based on the first chapter of my PhD thesis at the University of York. I am grateful to James Wright for the encouragement and support, and Alvaro Pereira for the useful comments. All errors are mine.

1. Introduction

Ever since the collapse of communism, and the end of the Balkan wars that followed the dissolution of Yugoslavia, the countries of the Western Balkans have contemplated the idea of joining the European Union (EU) and thus following in the steps of Slovenia, the first former Yugoslavian country to become an EU member in 2004. Since then Croatia and the Former Yugoslav Republic of Macedonia (FYROM) have been awarded candidate country status, and Serbia, Albania, Montenegro and Bosnia and Herzegovina are hoping to follow suit in the future.

Although the EU recognises the Western Balkan countries as potential candidate countries, it is not certain when or whether they will join. The most optimistic scenarios place EU accession around 2013-2015 (Gropas (2006)) given the progress made so far, whereas recently there have been voices in the Union calling for a privileged relationship option to be offered instead. Regardless of the outcome, looking into the consequences that the enlargement to the Western Balkans would have on decision-making and the distribution of power between member states will provide a clear idea of what to expect.

Decision-making in the EU rests on a triangle of three institutions: the European Parliament, the European Commission, and the Council of Ministers (subsequently referred to as the Council). The role of the European Commission is to look after the interests of the EU as a whole and it is independent of national governments. It is politically accountable to the European Parliament, which has the authority to dismiss it by means of censure. One of the most important tasks of the European Commission is drafting proposals for new legislation, which are subsequently presented to the European Parliament and the Council. The European Parliament is made up of members directly elected by EU citizens every five years to represent their interests and is structured according to political rather than national interests. The Council makes day-to-day decisions and along with the European Parliament decides on EU legislation and the annual EU budget. It also promotes

economic and employment policy coordination, and makes limited decisions about common foreign and security policy. It consists of ministers of the governments of every member state of the EU, and so can be seen as a cabinet of cabinets that represents national interests. Therefore the distribution of power within the Council matters. The make up of the Council changes depending on the nature of the subject under discussion. For example, if decisions need to be made about farming, then the ministers of agriculture will form the Council.

Given the importance of the distribution of power within the Council this paper focuses exclusively on this institution. The aim of the paper is to measure the voting power of each EU state within the Council under the assumption that the Western Balkan countries accede to the Union. Where power is used to mean the probability of a country being pivotal to the outcome of a given vote. A number of papers in the past have applied different power indices to political bodies and situations that can be described as weighted voting games. For example the Shapley-Shubik Power Index (SSI) was used by Shapley and Shubik (1954) to model the US Congress, and subsequently by Kauppi and Widgren (2004) to explain EU budgeting, by Levinsky and Silarszky (1999) and Winkler (1998) to study the distribution of power in the Council after the accession of Eastern European countries, and by Algaba *et al* to examine the distribution of power in the Council under both the Nice and Constitutional Treaty rules. The Banzaf power index (Banzaf (1965)) has been used by Hosli (1995) to measure voting in the Council under the double majority rules, by Johnston (1995) to analyse the position of the United Kingdom (UK) on Qualified Majority Voting (QMV) in the EU shortly before the accession of Austria, Sweden and Finland, and by Algaba *et al* (2007) to analyse the distribution of voting power in the Council under both the Nice and Constitutional Treaty rules. Baldwin and Widgren (2005) used both the SSI and Banzaf indices to measure the impact of Turkey's membership on EU voting.

However due to the uncertainty of the integration of the Western Balkans into the EU little research has been carried out looking at possible issues that might arise, and none has as yet examined the impact on the existing members' voting power, or the a priori coalitions that might be formed between them. This paper addresses this gap by examining the distribution of power within an enlarged Council, paying particular attention to the cases where a priori unions are formed between the member

states. The SSI is used, as well as its modification introduced by Owen (1977) in the case where a priori unions are likely to arise.

This paper reveals that if the accession of the Western Balkans takes place under the Nice Treaty rules the workability of the EU will be diminished, with a reduction in the probability of passing decisions. The voting power of all current member states will be reduced, although the “paradox of new members” might occur where the power of some existing members is increased. In contrast if the Western Balkans joined under the Reform Treaty rules there would be little impact on the efficiency of the EU and its ability to act. The voting power of existing member states is again reduced, with the small EU members suffering substantial losses in voting power. The inefficiency of a priori coalition formation between countries of dissimilar size is also revealed, along with the likely occurrence of the “paradox of size”, where some countries are made worse off through cooperation. This result is not affected by the enlargement.

The paper is organized as follows: section 2 describes decision-making in the Council under the Nice and Reform Treaty rules and what the change of rules would mean for the EU states; section 3 explains the logic and mathematics of the SSI, its generalisation by Owen (1977), and why it was chosen over the equally known and used Banzhaf power index; section 4 describes the data, and presents and interprets the results obtained both with and without the assumption of a priori coalitions between the EU members; and finally section 5 concludes.

2. Decision-Making in the EU Council of Ministers

Until November 2004 the Council made decisions based mostly on QMV. This system allocated weighted votes¹ to all the member states and the threshold for a proposal to pass was 71% of votes. In the EU15 the total number of votes was 87², and after the eastern enlargement of the EU in 2004 all EU15 members maintained the same number of votes, while the votes given to the new members were a simple interpolation of the EU15 votes as specified in the accession Treaty. This QMV

¹ The number of votes depended mostly on the size of countries.

² Germany, Italy, the UK and France had 10 votes each, Spain 8 votes, Belgium, Greece, the Netherlands and Portugal 5 votes each, Austria and Sweden 4 votes each, Denmark, Ireland and Finland 3 votes each, Luxembourg 2 votes.

system favoured small countries, and as the 2004 and previous enlargements welcomed mostly small nations, there was a shift of power from bigger to smaller countries, and thus uneven representation of EU citizens, which put the democratic character and legitimacy of decisions taken in danger. Therefore reform was deemed necessary.

After extensive debate and bargaining a compromise was finally reached at the Nice Summit (See Moberg (2002) for details), the rules of which came into force in November 2004 and are supposed to continue to govern the EU for five years. The Nice Treaty brought three major changes. To begin with, the votes of every country were weighted anew as depicted in table¹³.

Table 1: The new weighted votes allocation in the EU Council for the EU27

UE-27	Voting rights		Percentage of total			Gap to the smallest	
	Pre Nice system	Nice Treaty	Pre Nice system	Nice Treaty	Impact of reform	Pre Nice system	Nice Treaty
Germany	10	29	7.5	8.4	0.9	5.0	9.7
France	10	29	7.5	8.4	0.9	5.0	9.7
United-Kingdom	10	29	7.5	8.4	0.9	5.0	9.7
Italy	10	29	7.5	8.4	0.9	5.0	9.7
Spain	8	27	6.0	7.8	1.9	4.0	9.0
Poland	8	27	6.0	7.8	1.9	4.0	9.0
Romania	6	14	4.5	4.1	-0.4	3.0	4.7
Netherlands	5	13	3.7	3.8	0.0	2.5	4.3
Greece	5	12	3.7	3.5	-0.3	2.5	4.0
Czech Rep.	5	12	3.7	3.5	-0.3	2.5	4.0
Belgium	5	12	3.7	3.5	-0.3	2.5	4.0
Hungary	5	12	3.7	3.5	-0.3	2.5	4.0
Portugal	5	12	3.7	3.5	-0.3	2.5	4.0
Sweden	4	10	3.0	2.9	-0.1	2.0	3.3
Bulgaria	4	10	3.0	2.9	-0.1	2.0	3.3
Austria	4	10	3.0	2.9	-0.1	2.0	3.3
Slovakia	3	7	2.2	2.0	-0.2	1.5	2.3
Denemark	3	7	2.2	2.0	-0.2	1.5	2.3
Finland	3	7	2.2	2.0	-0.2	1.5	2.3
Ireland	3	7	2.2	2.0	-0.2	1.5	2.3
Lithuania	3	7	2.2	2.0	-0.2	1.5	2.3
Latvia	3	4	2.2	1.2	-1.1	1.5	1.3
Slovenia	3	4	2.2	1.2	-1.1	1.5	1.3
Estonia	3	4	2.2	1.2	-1.1	1.5	1.3
Cyprus	2	4	1.5	1.2	-0.3	1.0	1.3
Luxembourg	2	4	1.5	1.2	-0.3	1.0	1.3
Malta	2	3	1.5	0.9	-0.6	1	1
TOTAL	134	345	100	100	0		

Note: The last column shows the allocation of vote when compared to the smallest member (*i.e.* expressed as the number of time the vote of the smallest member).

Source: Bobay(2001)

³ Table 1 taken from Bobay (2001)

Spain and Poland were the big winners as their voting power share grew by 1.8% in the EU25 (known as the “Aznar Bonus”⁴) (Baldwin *et al* (2004)), following Spain’s demand to obtain blocking power in the enlarged EU (Bobay (2001)). The big countries made moderate gains of 0.9% in the EU25, and small/medium countries lost power (Baldwin *et al* (2004)). Secondly the Qualified Majority Threshold (QMT) was increased to 72.2%⁵ of Council votes. Finally two more criteria were added: the number of yes votes has to be 50% and at least 62% of the EU population has to be represented. The population criterion was added to accommodate Germany’s demand to break the equality parity it had with the other three big nations, namely the UK, France, and Italy⁶ (Bobay (2001)).

There has been extensive debate about the Nice Treaty rules – for example Baldwin *et al* (2004) argue that the new rules are a mistake that needs to be corrected because they lower the ability of the EU to make efficient decisions, the possibility of which is also stated by Tsebelis *et al* (2002), Tiilikainen *et al* (2002), and Bobay (2001). On the other hand other researchers, including Moberg (2002), dismiss the above and claim the population criterion is only useful for coalitions that include Germany, and that the majority of states criterion will never have to come into practice. In any case the five years the Nice Treaty rules will be in force are critical, because they will determine how well the enlarged EU can operate, and any failure will undoubtedly strengthen eurosceptics.

From November 2014 the Nice Treaty rules will be abandoned and the rules of the Reform Treaty are supposed to come into force. These new rules will be applied gradually during 2014-2017, but in this period a member state can still ask for the Nice Treaty rules to be applied if it wishes⁷. Weighted voting will be replaced by double majority, so a proposal will need to represent 55% of EU member states and 65% of the EU population to pass. The member state threshold was introduced in order to convince small countries to accept the power gap between themselves and bigger states, and the population threshold to reconcile Spanish and Polish wishes to maintain the power gained at Nice, and French fears of small states blocking decision making. In addition, any blocking coalition must have at least four members – a

⁴ After Jose Maria Aznar, prime minister of Spain at the time of negotiations.

⁵ Actually QMT was set at 74% at Nice in an attempt to reverse Spain and Poland’s power gain, but later it was decided that this was not efficient and was lowered to 72.2%.

⁶ Note that this is against the rules for equality between the large states in the EU.

⁷ EurActiv 2007

measure intended to prevent a coalition consisting of France, Germany and Belgium, in other words the “old Europe” (Devuyst (2004)). Furthermore, if a number of states “somewhat” less than a blocking minority is opposed to the adoption of a rule, then the Council should try and find a satisfactory way to address the concerns of the disagreeing group at a reasonable time and without prejudicing the obligatory time limits. This is in fact a renewal of the Ioannina Commitment⁸ and until March 31st 2017 “somewhat” will be defined as either 75% of the population level, or 75% of the number of states required to form a blocking minority. From April 1st 2017 “somewhat” will be defined as 55% of the population level, or 55% of the number of states required to form a blocking minority (Presidency Conclusions 2007). Unanimity will still be the rule for more sensitive issues such as taxation, social security, foreign policy and defence.

As with the Nice Treaty, the big countries, especially Germany, will benefit from a shift of power towards them, this time at the expense of Spain and Poland (a total reverse of the “Aznar Bonus”) known as the “Zapatero Compromise”⁹, and medium countries with populations of around 10 million. It is estimated that Germany will have approximately one third more power than France, which will put an end to the equality of the Franco-German axis by making France the junior member of the partnership (See Balwin *et al* (2004)).

The rules of the Reform Treaty are in fact the same as the rules of the Constitutional Treaty which was rejected by both the French and the Dutch in national referenda held in 2005. After two years of uncertainty and a lot of bargaining EU leaders managed to reach a compromise and keep the decision making rules of the Constitutional Treaty almost intact. Therefore, just like the Constitutional Treaty rules, the rules of the Reform Treaty are expected to restore the workability and efficiency of the EU.

3. The Shapley-Shubik Index (SSI)

Voting power indices are a useful tool because they can be seen as a statistical measure that summarizes specific properties of voting games, and can therefore

⁸ Made in 1994 during the discussions regarding the institutional characteristics of the EU’s enlargement with Austria, Finland and Sweden.

⁹ After Jose Luis Rodriguez Zapatero, prime minister of Spain at the time of negotiations.

supplement any voting theory and especially cooperative game theory and its applications to modeling political institutions (List (2003)). The most widely used indices of power are the SSI and the Banzhaf index.

The SSI has its basis in cooperative game theory and the idea that each player has power when a change in their vote changes the outcome of the game. It measures power in an abstract sense, assuming that different players have different intensities to accept or reject a bill. To understand this assume that a number of individuals are about to vote on an issue. They vote in order and as soon as a majority has been reached the issue is declared passed and the person to vote last is given credit for having passed it. Now choose the order of people who vote at random. The frequency with which a person is part of the group whose votes are used can be calculated, as well as the number of times a certain individual is pivotal. This number of times gives the value of the index. As Shapley and Shubik (1954) put it "...[the index] measures the number of times that the action of the individual actually changes the state of affairs".

John Banzhaf rejected the SSI in 1965 arguing that the order in which players become part of a coalition¹⁰ should not be a crucial matter. The Banzhaf index assumes that all players are independent, equally likely to form a coalition and equally likely to vote for or against a bill. The index measures the ability of a player to turn a losing coalition into a winning coalition, and is obtained by counting the number of times a player is likely to break a winning coalition, and then dividing that by the total amount of times that all players are likely to break a winning coalition in order to obtain a relative measure. In the words of Banzhaf (1965) "...the ratio of power of legislator X to the power of legislator Y is the same as the ratio of the number of possible voting combinations of the entire legislature in which X can alter the outcome by changing his vote to the number of combinations in which Y can alter the outcome by changing his vote".

Although most of the time the differences between the results obtained using the SSI and the Banzhaf index are marginal, there can be cases where they differ to a considerable extent, for instance when they are applied to double majority voting

¹⁰ Note that the way the term "coalition" is used in this section does not mean and should not be confused with the term "a priori unions" or "a priori coalitions". It is used to refer to the number of players supporting the bill.

systems (Paterson (2007))¹¹. This paper considers such a system and therefore the question of which index should be applied arises.

Winkler (1998), Baldwin *et al* (2005), and Paterson (2007) suggest that the SSI is a better measure when communication and coalition formation is likely between the players, which is very often the case in EU voting, whereas the Banzhaf index is more suitable when there is no coalition building and just the final votes are observed (Straffin (1988)). In addition the SSI is the only one of the indices used to measure power that satisfies the set of postulates introduced by Felsenthal and Machover (1995), and has strong explanatory power as demonstrated, for example, by Levinsky and Silarszky (1998). Given this the SSI is chosen for the purposes of the paper.

Nonetheless it must be borne in mind that criticisms of the SSI have been made. One of the most common, as put forward for instance by Tsebelis and Garrett (1996 and 1999), is the fact that the index focuses on the payoffs of the players rather than analysing the game itself and the preferences of the players. Nevertheless, as voters in the Council change and the issues that decisions need to be made on in the future are unknown, it is impossible to know the structure of the game and the true preferences of the players a priori. Thus the probabilistic approach of the SSI is very valuable and provides a good idea of the potential of every EU state to influence outcomes. In addition, whenever there is a possibility of players cooperating more closely, the SSI can be modified to allow for that, as demonstrated by Owen (1977).

3.1 A mathematical explanation of the SSI¹²

Suppose that U denotes the universe of all players, and g is a superadditive set-function from U to the real numbers i.e. $g : U \rightarrow \mathfrak{R}$. Let g denote a cooperative game with transferable utility. Then:

$$\begin{aligned} g(\emptyset) &= 0 \\ g(C) &\geq g(C^*) + g(C - C^*) \text{ for every } C^* \subseteq C \subseteq U \end{aligned}$$

¹¹ See the Appendix II for indicative numerical examples between the two indices

¹² It is not the paper's purpose to give a detailed mathematical explanation of the index or its modification as this is beyond the scope of this paper. Therefore throughout this section the methodology and simplifications made by Levinsky and Silarszky (1999) will be followed because they make the mathematical understanding of the index easier. See Shapley (1953) for a full mathematical explanation.

where C^* and C are coalitions (sets) of players within U . Let G denote the space of all games, and G^n the space of n -person games within G i.e. $G^n \subseteq G$. If there exists coalition C such that $g(C) \neq 0$ then the game u is non-zero.

Suppose also that $g \in G$ and $f: G^n \rightarrow \mathfrak{R}_{+0}^n$ defined for every n , is the value of the game. A coalition N is called carrier of the game g when for every C , $g(C) = g(C \cap N)$, i.e. N contains the coalition C .

Shapley (1953) introduced the value Φ :

$$\Phi_i(g) = \sum_{i \notin C \subset N} \frac{c!(n-c-1)!}{n!} [g(c \cup \{i\}) - g(c)] \quad (1)$$

where n is the number of elements in the carrier $N \subset U$, c is the number of elements in the coalition C , and i is the player for which the value is being calculated.

The game g is a simple game if $g(C) \in \{0,1\}$ for every C . Suppose that G_s is the space of all simple games, and $G_s^n \subset G^n$ is the space of all simple n -person games. Player i belonging to coalition C is pivotal when $g(C)=1$ and $g(C/\{i\})=0$. When $g(C)=1$ then C is a winning coalition, whereas when $g(C)=0$, C is a losing coalition. If and only if $g(U/C)=0$ then the coalition C is a blocking coalition.

When dealing with weighted games one should also consider the following:

$$g(C)=1 \Leftrightarrow \sum_{i \in C} \beta_i \geq q$$

where β_i is the weight of player i and q is the quota. The game index is the function f for which $f: G_s^n \rightarrow \mathfrak{R}_{+0}^n$ for every $n \in \mathfrak{N}$. Every value f of the game generates an individual index, the SSI. The SSI is given by (1).

A simplified way of understanding (1) is by thinking of $[g(c \cup \{i\}) - g(c)]$ as the fair compensation given to player i so as to remain in the coalition, and then averaging this over all possible permutations in which the coalition can be built.

3.1.2 SSI with a priori unions

If one allows for some players in a game to cooperate more closely with each other than with the rest, then the idea of a priori unions introduced by Owen (1977) can be applied as follows:

Suppose that $Y = \{L_1, \dots, L_m\}$ is a partition of the carrier N to an a priori coalition structure, that is a set of alliances who have agreed beforehand to cooperate in the game v . The game (g, P) where $P = \{1, \dots, m\}$ denotes the set of unions, and

$g(C)=v(\cup_{j \in s} L_j)$, for every $C \subset P$, can be used to calculate total power Φ_j for union L_j . Assume that the union does not lose the power it could acquire. Then the sum of individual indices in every union equals the total power of that union :

$$\sum_{i \in L_j} \Phi_i^1[v; Y] = \Phi_j(g) \quad (2)$$

Now consider a subgame x_j among the players of the union L_j . This mirrors the potential of different sub-unions when players defect from L_j and will help compute the distribution of power in L_j . Assume that Q is a sub-union of L_j . So then, the characteristic function of game x_j can be defined as the power indices of sub-unions of L_j in the game $g_{L_j|Q}$, in which L_j has been replaced by Q in the game (g, P) :

$$g_{L_j|Q}(C) = \begin{cases} v(\cup_{k \in C \setminus \{j\}} L_k \cup Q) & j \in C \\ v(\cup_{k \in C} L_k) & j \notin C \end{cases} \quad (3)$$

and $x_j(Q) = \Phi_j[g_{L_j|Q}]$. In the game with a priori unions the value for individual players can be computed as a value in x_j (Owen (1977)). Therefore, $\Phi_i^1[v; Y] = \Phi_i[x_j]$. In order to get the formula for $\Phi_i^1[v; Y]$ observe that for $i \in L_j$:

$$\Phi_i[x_j] = \sum_{Q \subset L_j, i \notin Q} \frac{q!(l_j - q - 1)!}{l_j!} [x_j(Q \cup \{i\}) - x_j(Q)] \quad (4)$$

Note that $x_j(Q) = \Phi_j[g_{L_j|Q}]$ and :

$$x_j(Q) = \sum_{C \subset P, j \notin C} \frac{s!(m - c - 1)!}{m!} [g_{L_j|Q}(C \cup \{j\}) - g_{L_j|Q}(C)] \quad (5)$$

$$x_j(Q \cup \{i\}) = \sum_{C \subset P, j \notin C} \frac{s!(m - c - 1)!}{m!} [g_{L_j|Q \cup \{i\}}(C \cup \{j\}) - g_{L_j|Q \cup \{i\}}(C)] \quad (6)$$

Let $W = \cup_{a \in C} L_a$. Deducting (6) from (5) and considering (3) one can see that for $j \notin C$

$$\begin{aligned} g_{L_j|Q \cup \{i\}}(C) - g_{L_j|Q}(C) &= 0 \\ g_{L_j|Q \cup \{i\}}(C \cup \{j\}) - g_{L_j|Q}(C \cup \{j\}) &= v(W \cup Q \cup \{i\}) - v(W \cup Q) \end{aligned} \quad (7)$$

Substitute (7) and the equation derived from deducting (6) from (5) into (4):

$$\Phi_i^1[v; Y] = \sum_{C \subset P, j \notin C} \sum_{Q \subset L_j, i \notin Q} \frac{q!(l_j - q - 1)! c!(m - c - 1)!}{l_j! m!} [v(W \cup Q \cup \{i\}) - v(W \cup Q)] \quad (8)$$

where c , q , and l_j are the cardinalities of the sets C , Q , and L_j respectively. Equation (8) provides the power index of every individual player participating in a game with a priori unions.

An intuitive way of understanding the process described above is by thinking of the game as a two step process. First every union L_j selects one of its members, which carries all the weight of the union, to act as a representative when bargaining with other unions. At this point the total power of the union is evaluated. In the next and final step the total power of the union is decomposed among the members of the union. The power share of every individual member reflects the power they can get when forming sub-unions within L_j or defecting to form coalitions with other unions L_i , where $i \neq j$.

4. Data and results

The rules of the Nice Treaty are supposed to be abandoned in November 2009 with the rules of the Reform Treaty coming into force thereafter. However at present it is not known under what rules the Western Balkan countries will join the EU if they do so. Therefore, the impact the accession of the Western Balkans would have on the distribution of power within the Council will be examined under both the Nice and Reform Treaty decision rules.

It is well known that within the EU some states cooperate more closely with each other than with the rest. This activity is accepted by all members of the Union although it might not always be liked. De Schoutheete (1990) analysed the concept of subsystems within the EU of 12. A subsystem is a collection of states who feel they are destined to play a leading role, or wish to press forward with issues the rest are either not willing or ready to deal with, or wish to maintain certain privileges acquired before the subsystem was formed. This special relationship among states, has to be durable, formalised if possible in the form of a Treaty or agreement, effective, and not rejected by others. De Schoutheete (1990) found that at the time two subsystems were in existence in the EU, that of France and Germany, and that of the Benelux countries, Belgium, Luxembourg and the Netherlands. An example of the existence of the Franco-German subsystem is a proposal drafted by the two countries on political cooperation which was submitted to the European Council of Milan in 1985, and which influenced the negotiations that were related to that part of the Single Act (De

Schoutheete (1990)). With respect to the Benelux subsystem De Schoutheete (1990) noted that before every European Council the heads of states of Belgium, Luxembourg, and the Netherlands meet in order to discuss their views, and coordinate their actions. Considering the sub-system criteria, Stålvant (1990) concluded that the Scandinavian countries can also be considered as a subsystem.

Since 1990 it is possible that more subsystems or functioning coalitions between countries have evolved. Those most frequently mentioned in the literature are: the Mediterranean countries Greece, Portugal, Spain, joined often by Italy and after the 2004 enlargement by Malta and Cyprus (for example see Levinsky and Silarszky (1999), and Wallace (1990)); and the Central and Eastern European Countries (CEECS) (for example see Levinsky and Silarszky (1999) and Winkler (1998)). This paper will consider these coalitions. Additionally it will be assumed that if the Western Balkans join the EU they will join the a priori coalition of the CEECS. This is because these countries would be expected to have similar preferences due, for example, to their common heritage, experience of the transition process and relatively homogenous economies.

4.1. Nice Treaty

As decision-making under the Treaty of Nice allocates member states weights depending largely on their population, this paper uses the same method to determine the weights of the Western Balkan countries. Consequently Serbia with a population of approximately 7.5 million is allocated 10 votes, the same as Bulgaria and Sweden who have populations of 7.5 and 9 million respectively. Croatia is allocated 7 votes, having a population of 4.4 million which is smaller than that of Finland (5 million) but bigger than that of Ireland (4 million) who have 7 votes each. Bosnia and Herzegovina is also assigned 7 votes as it has the same population as Ireland. Moreover Albania with a population of 3.2 million is given 7 votes because it is larger by 1.2 million than Latvia who leads the group of countries with 4 votes and this allocation appears to be fairer. Finally, FYROM and Montenegro are given 4 votes each as they have similar populations to Latvia and Luxembourg.

All calculations are performed using the program Indices of Power (IOP)¹³ because it allows the calculation of the index in cases where the players have multiple weights, as in the Treaty of Nice rules, and reports the number of winning coalitions between the players, as well as Coleman's decision probability, which depicts the ability of the EU to act. Two cases are identified, that of the EU27, and the EU33. The results are presented in table 2¹⁴. Column three refers to the index before the Western Balkan enlargement, and column five refers to the index after the enlargement. Column four refers to the voting power gap between every member and Malta -the country with the least voting power- before the enlargement, and column six to the voting power gap after the enlargement has taken place. Finally, the decision probability, and the number of winning coalitions are reported.

[insert table 2 here]

The first thing one notices is the jump in winning coalitions from 3,957,782 in the EU of 27 members to 166,296,254 in the EU of 33. The addition of six members expands the number of possible winning coalitions by 42 times. The results also reveal the unworkability of the EU under the Nice Treaty rules, and the further deterioration of viability in the EU33 as expected. The decision probability, which depicts the EU's capacity to act, declines in the EU33 to 1.94% from 2.95% in the EU27. This supports the claims of politicians who call for no further enlargement of the EU after the accession of Romania and Bulgaria, until the matter of decision-making to follow the Nice Treaty rules is resolved.

The enlargement will bring a reduction in the power of every EU country. Of the big four Germany will lose the least in relative terms, 8.66%, and Italy the most at 9.4%. Of all the member states Poland will witness the biggest loss at 10.27%, followed by Cyprus 10.15%, Luxembourg 10.13% and Latvia, Slovenia, Spain, and Estonia who will lose around 10.1% each. Germany again loses the least overall, and remains the country with the most voting power. The above are clearly depicted in Figure 1. The average power loss will be 9.82%. Moreover, the gap between France,

¹³ Thomas Bräuninger and Thomas König (2005) *Indices of Power IOP 2.0* [computer program] Konstanz: University of Konstanz [<http://www.tbraeuninger.de/IOP.html>]. IOP will be used for all calculations in the paper. Permission has been granted by the creators.

¹⁴ The statistical form 100SSI instead of SSI has been used in all the tables, as that makes them easier to read. All tables and figures can be found in Appendix I

the second most powerful nation in terms of voting power, and Germany will grow by 52.48%, although in absolute terms it will grow by just 0.0477 percentage points. The gap between Germany and Malta, which is the least powerful nation will increase from 997% to 1015%, the largest rise observed. Paradoxically though, the enlargement will close the power gap between Poland and Malta from 891% to 889%. Overall the four big countries will lose the least of their voting power in percentage terms.

[insert figure 1 here]

Now assume that a priori unions are formed¹⁵ and no counter-unions take place. The situation for the EU27 is summarized in table 3. The third column presents the SSI for every member if no coalitions are formed¹⁶. The remaining columns assume the following: column four assumes a union between France and Germany; column five assumes cooperation between the Mediterranean countries and Italy; as Italy does not always find itself in agreement with the Mediterranean countries this case is considered separately in column seven; column six assumes an a priori union between the CEECs; column eight assumes a coalition between the Scandinavian countries; column nine assumes cooperation between the Benelux countries; and the last column presents the case where all coalitions are formed. Finally, next to every index the loss of voting power caused by the respective a priori coalition is reported for every state.

[insert table 3 here]

A coalition between France and Germany brings gains for both countries, 15% and 13.4% respectively, making them the most powerful nations in the EU. This a priori union seems to have little effect on the voting power of big and near big countries -the UK and Italy witness the smallest power decline in the EU, 0.52% and 0.19% respectively-, whereas it seems to affect mostly medium and small member states, especially Malta by 6.17%, and Cyprus by 6.08%. Although the ability of the

¹⁵ Equation (2) implies that the weight of a union can be obtained by regarding the whole union as a player with weight equal to the sum of the weights of the players that form it. This will be used many times throughout the paper.

¹⁶ The same as 'Power index before' in table 2

EU to act almost doubles from 2.95% to 4.59%, it still is relatively low comparing to the effect on Coleman's decision probability by other a priori unions such as the Mediterranean and the CEECs coalitions.

A similar situation is depicted in the next column where the Mediterranean countries and Italy cooperate. All these countries benefit greatly, particularly Malta by 34.27%, and Cyprus by 33.84%, followed by Greece and Portugal, at 29.4% each, Spain by 21.59% and Italy by 20.44%. Note that as part of the coalition both Italy and Spain individually have more power (approximately 2.6 and 1.8 percentage points respectively) than France, Germany and the UK, making them the most powerful countries in the Union. Similarly Greece and Portugal each have more power than Romania and Netherlands, who have more votes and bigger populations, and in the same fashion tiny Malta has more power than any of Luxembourg, Latvia, Slovenia, and Estonia. Any other country that doesn't belong to the coalition loses power. The biggest losses (over 10%) are recorded for Germany, France, the UK and Poland, and the smallest for Bulgaria at 3%. Comparing the above with column seven, the case where Italy does not cooperate with the Mediterranean countries, it becomes clear that Italy is better off aligning itself with the Mediterranean coalition – by almost 2 percentage points. Still, Greece, Portugal, Cyprus, Malta, and Spain make gains, and the latter country obtains big country status although it has less votes than the big countries. As expected the rest of the countries record small losses.

Now assume that the CEECS form a coalition. This will make Poland the most powerful country in the EU gaining 2.7 percentage points or approximately 33.66%. Thus it can be inferred that Poland is the most benefited. The smallest countries of the coalition Estonia, Slovenia and Latvia reap the greatest gains, 45.82 % each. The rest gain over 40% in relative terms. All other EU members witness losses, especially Cyprus by 25.44%, and Luxembourg by 25.33%, and the rest between 11.64% (Germany) and 22.28% (Greece). Notice that Coleman's decision probability soars to over 12%. It is no surprise that this coalition is the most powerful both individually, in terms of the gains made in relative forms by its members, and collectively, as it has the most votes, 101 in total and so is closer to forming a blocking coalition.

Next, consider a union between the Scandinavian countries. All three members make gains between 3.8% and 5%, whereas most of the rest of the EU members record small losses. This union has very little impact on power, although a paradox is observed in the cases of Cyprus, Malta, Luxembourg, Slovakia, Latvia, Slovenia, and

Estonia. These countries do not belong to the Scandinavian coalition and yet benefit from it, although given the small scale of benefit this result is interesting only from a theoretic point of view. It is observed again with Germany and Malta when the coalition between the Benelux countries is formed. The latter benefits mostly Luxembourg, whose power grows by 9.41%, and has very small impact overall.

Finally, the last column assumes the creation of all the above coalitions. The decision probability obtains its greatest value at 16.4%. Austria, which doesn't belong to any coalition, almost doubles its power, making a profit of 45.3%. The members of the CEEC coalition benefit the most, between 47.7% for Estonia, Latvia, Slovenia and 35.4% for Poland, the most powerful nation in the EU. Cyprus and Malta also make small gains of 1.9% and 2.2% respectively. The remaining countries lose. Ireland in particular records losses of 63%, the biggest in the EU, followed by Sweden at 39.46%, the Netherlands at 38%, and the rest of the Scandinavian and Benelux countries. Greece and Portugal lose the least, about 1.4% each. An interesting fact in this case is that it deprives both France and Germany of their big country status, as Poland and Spain, who have less votes, have more voting power. Overall table 3 reveals the domination of the CEEC coalition under the Nice Treaty decision-making rules.

[insert table 4 here]

Table 4 summarizes the results obtained for the EU assuming that the enlargement to the Western Balkans has taken place under the Nice Treaty rules¹⁷. A coalition between France and Germany will benefit both countries by 16% and 14% respectively, making them the most powerful members. Again one can observe the paradox where countries outside a coalition profit from it, as the UK and Italy record small gains of 1.6% and 2% respectively. The rest of the countries witness moderate losses, ranging from 6.4% for Malta, to 1.1% for Spain. However, the accession of the Western Balkans has brought about a 7.9% loss of power for the Franco-German coalition, from 20.18% to 18.57%.

¹⁷ So the index in column three is the same as index in column five from table 2. Also, whenever reference is made to the impact of the enlargement while explaining the results of tables, it will always be in comparison to the table presenting the same coalition before the enlargement took place.

Assume now that Italy and the Mediterranean countries cooperate. Column five reveals gains for all members of the coalition, especially for Malta, at 30.3%, and Cyprus, at 30%. Spain and Italy become the most powerful countries in the EU, having almost 2 percentage points more power than Germany, the UK, and France, who lose the most: 8.7%, 7.5% and 7.5% respectively. Poland and the Netherlands follow with 6.3% and 5.9% respectively. Of all countries Romania's power declines the least at 4.23%. The accession of the Western Balkans has reduced the power of the coalition from 31.58% to 27.56%, which accounts for approximately 12.71%. Comparing the above to column eight where Italy acts on its own, the countries of the coalition continue to make gains, although these are smaller not having Italy by their side, while Italy loses the chance to become the most powerful nation in the Union. Clearly Italy is better off cooperating with the Mediterranean coalition.

Next, consider the case where the CEECs have welcomed the West Balkan countries to their coalition, as presented in column six. This would increase the total power of the coalition by 8.9%, from 40.18% to 43.76%. The new enhanced coalition will benefit all of its members, particularly Montenegro by 28.4%, and Latvia, FYROM, Slovenia and Estonia by 27% each. Poland, the "leading" country of the CEECs block will become the most powerful nation in the EU. All other countries will record losses, especially Greece, Portugal, Sweden, the Netherlands, Belgium, and Austria at over 21% each. The smallest losses will be Germany's at 1.8%. Note the jump in the decision probability when comparing to the case of no coalitions. Again it is normal for this coalition to be the most powerful because it has the most voting weights, 140 in total, and is closer to forming a blocking coalition than the rest.

Column seven summarizes the case where the Benelux countries cooperate. As expected all three countries benefit from it. Luxembourg's power increases by 9%, Belgium's by 4.8%, and that of the Netherlands by 4%. The rest of the countries suffer minor losses. The accession of the six new countries has reduced the power of this coalition by 10%, from 8.60% to 7.69%. A similar situation is depicted in column nine, where the Scandinavian countries form a 'union'. Sweden, Denmark, and Finland see their power rise by 3.7%, 4.8%, and 4.9% respectively, although the total power of the union has been decreased by the enlargement from 6.95% to 6.26%, or by 9.8%.

Finally, the last column considers the case where all the coalitions take place. Clearly this situation is very profitable for the UK which does not belong to any of the

coalitions, and yet witnesses an increase in its power by 30.3%. This is a nice illustration of the “paradox of new members”, which occurs in the words of Brams (1975) “[when] one or more players are added to a voting body and the voting power of at least one of the original members increases – rather than decreases or stays the same – in the new and larger game”. Thanks to this paradox the UK becomes the most powerful country in the EU. Also, as expected, gains are made by the coalition of the East European members, especially by Montenegro at 25%, Latvia, FYROM, Slovenia and Estonia at 24% each. Although Poland benefits the least of all the members of the CEEC coalition, by 14%, it has the chance to become the second most powerful nation in the Union, ahead of Germany, France, and Italy who have all more votes. Other countries that profit are Greece and Portugal, by 3.2% each, and Cyprus, and Malta, by approximately 7% each. On the other hand, Austria and Ireland are severely affected as their power declines by 85.8% and 79.4% respectively. For the rest, losses range from 27.5% for the Netherlands, to 2.5% for Spain. Obviously the enlargement is of great benefit¹⁸ to the UK, by 24.3%, and the CEEC coalition, by 4.9%.

4.2 Reform Treaty

Decision-making according to the Reform Treaty does not depend on weighted voting, instead each issue requires the support of 65% of EU population and 55% of EU member states to be declared passed. Based on this, for the case of no coalitions the results are summarized in table 5.

[insert table 5 here]

As with the Nice Treaty rules the number of winning coalitions is striking, especially in the case of the EU33: 1,034,097,903. One cannot help noticing that the Reform Treaty improves significantly the ability of the EU to act which is estimated at 12.88% for the EU27 and 12.04% for the EU33¹⁹. Of all the states the smallest i.e. Malta, Luxembourg, Cyprus and Estonia will witness the largest loss of power in relative terms: 24%, 23.51%, 22.43% and 20.5% respectively, while the big four will

¹⁸ Comparing to the last column of table3.

¹⁹ Remember that the respective numbers for the Nice Treaty were 2.945% and 1.94%

lose the least. Surprisingly, of the big four, the enlargement will affect Germany the most which in relative terms will lose approximately 3.34%, and Italy the least, 3%. These are illustrated in figure 2.

[insert figure 2 here]

Although the power gap between Germany and France will close a little, Germany will continue to have about 46% more power than France, which supports claims that the Reform Treaty will breach the Franco-German Alliance for good. Germany will be the most powerful nation in the Union. The gap between Germany and Malta, which is the least powerful nation will soar from 2082% to 2676%. The average loss of power will come to 11.4% in relative terms.

[insert table 6 here]

Now assume again that a priori unions are formed and no counter-unions take place. Table 6 presents the results²⁰. When France and Germany cooperate, both countries make gains of 23.7% and 14.9% respectively, which makes them by far the most powerful nations. Germany is 10.3 percentage points, and France 5.4 percentage points ahead of the UK, the third more powerful member in the EU. Once again we observe the paradox of countries who do not belong to the Franco-German coalition profiting from it, only this time on a greater scale²¹. These are mid-small countries with population around and below 10 million. The biggest beneficiaries are Malta by 37.53%, Luxembourg by 36.19%, and Cyprus by 33.6%. On the other hand the UK, Italy, Spain and Poland lose the most, 24.5%, 23.8%, 15.14%, and 14.18% respectively.

Next consider the case where Italy and the Mediterranean countries form a 'union'. While this coalition brings gains for the two biggest countries forming it, 11.6% for Italy and 14.5% for Spain, it reduces the power of the rest of the members of the coalition especially that of Malta by 89%, and Cyprus by 79.8%. Greece and Portugal also record losses of 6.9% and 7.7% respectively. Looking at the rest of the columns this phenomenon is repeated, which suggests that the Reform Treaty rules

²⁰ Remember that the third column of table 6 is the same as the third column of table 5.

²¹ A look at the table reveals that this paradox occurs at all other columns as well except the last.

may not benefit coalitions between dissimilar countries in terms of population. Other countries that make paradoxical profits are those with populations below or around 10 million. Luxembourg gains almost 42%, Estonia 33%, and Latvia and Slovenia gain 29% each. The rest of the states record losses, with Germany losing the most at 14.5%. Comparing the above to the results of column eight where Italy is not involved in the coalition, it is clear that Italy is better off cooperating with the Mediterranean states. Spain is the only member of the coalition to benefit, gaining 0.5%, with the rest seeing significant reductions in power. Malta loses 90.4% of its power, Cyprus 82.3%, Portugal 19%, and Greece 18%. All other nations apart from the big four benefit, especially Luxembourg by 25%, Estonia by 21%, Latvia by 19.4%, and Slovenia by 19.4%.

Column six assumes a coalition between the CEECs. Again only the most populous members of the coalition benefit, Poland gaining 17.3% and Romania 8.9%. The rest witness declines in power. Estonia loses 67.5%, Slovenia 57.8%, Latvia 57.8%, Lithuania 39.2%, Slovakia 25%, Bulgaria 15%, Hungary 6.9%, and the Czech Republic 6.3%. However this coalition benefits any other country that doesn't belong to it and has a population less than that of Romania. Luxembourg, Malta and Cyprus benefit the most, gaining 58%, 60.6%, and 55% respectively. Germany records the biggest losses, 10%, followed by France 3.8% and the UK 3.79%.

In the next column the Benelux countries decide to cooperate but surprisingly this decision leads to a reduction in the total power of the block by 19% (or over one percentage point). This result is known as the “paradox of size” (Brams (1975)). Luxembourg is affected the most as it loses 87.5% of its power. Belgium and the Netherlands also record losses of 15% and 5.6% respectively. With the exception of Germany, whose power declines marginally by 0.4%, the remaining countries profit, particularly Malta, 9.6%, and Cyprus, 8.7%. This suggests that the smaller the nation is the bigger the benefit. The same outcome can be observed in the case where the Scandinavian countries form a coalition. The total loss of the Scandinavian block is 24% (or 0.75 percentage points). This translates to losses of 30.95% for Finland, 29.8% for Denmark, and 14.9% for Sweden. All other EU members gain power, especially Malta 8.6%, Luxembourg 8.4%, and Cyprus 7.8%.

Finally, assume that all coalitions are formed as depicted in the last column. The biggest beneficiaries are those who do not belong to any coalitions. Austria gains 82%, the UK 59%, and Ireland 28%. Italy, Spain and France also profit by 1.7%,

1.4% and 5.6% respectively. All other countries lose. The three smallest countries Malta, Cyprus, and Luxembourg record the worst losses – 90%, 81% and 87% respectively. The results suggest that it is better for a country not to be part of a coalition unless its population is above 40.3 million. Overall the table seems to suggest that coalitions are not very profitable for small countries when they cooperate with much larger countries. This might be the end of coalition formation as we know it.

[insert table 7 here]

Table 7 summarizes the results obtained presuming that the Western Balkans have acceded to the EU²². When Germany cooperates with France it is to the benefit of both countries by 8.9% and 17% respectively. Again paradoxically we have power gains for any country with population less than that of Greece that doesn't belong to the coalition, in particular for Malta 80%, Cyprus 69.6%, and Luxembourg 77%. The greatest losses in power are observed for the UK at 30%, Italy 29.26%, and Spain 18.89%. It can be inferred that the enlargement has increased the losses of the UK, Italy and Spain by about 5 percentage points, and the benefits of Malta, Cyprus and Luxembourg by about 40 percentage points, while reducing the power of the Franco-German coalition by 8.3%, from 32.36% to 29.65%.

Now consider the case where Italy and the Mediterranean countries cooperate. The biggest members of the coalition Italy and Spain record gains of 12.58% and 16% respectively, as do any other countries that do not belong in the coalition and have populations below that of Portugal. Luxembourg gains the most at 38%, followed by Montenegro 37%, and Estonia 29%. The junior members of the coalition Malta and Cyprus lose the greatest proportion of their power, 86% and 74.5% respectively. Portugal loses 0.8%, whereas Greece just retains its non-coalitional power. The enlargement to the Western Balkans has not only reduced the block's power from 24.58% to 24.01%, or by 2.29%, but has also reduced the losses of Portugal and Greece by about 6 percentage points, and increased slightly the gains of Spain and Italy. Comparing the above with the situation presented in column eight where the coalition does not include Italy, it is once again clear that Italy is better off aligning with the Mediterranean coalition. As for the rest of the members, Spain, the leading

²² The third column in table 7 is the same as the fifth column of table 5

member of the coalition, makes marginal gains, whereas the rest of the members lose even more. Malta loses 87.7% of its power, Cyprus 77.8%, Portugal 13.6% and Greece 12.97%. The big four record losses as well, especially Italy losing 3.1%. Profits are made by small countries not belonging to the coalition, especially by Luxembourg and Montenegro, which gain about 20% each, and Estonia which gains 16.7%. In this case the enlargement has reduced the losses of the junior members of the coalition by at least 3 percentage points and the gains of the small countries. It has also reduced the power of the coalition from 11.23% to 10.89%, or by 3%.

In column six the coalition of the CEECs has been joined by the countries of the Western Balkans. This addition has increased the power of the block from 21.46% to 25.70%, or by 19.74%. It is proved to be beneficial to the four biggest members of the coalition – Poland, Romania, the Czech Republic and Hungary – who gain approximately 20.3%, 14.44%, 2.25% and 1.79% respectively in relative terms. The remaining members of the coalition however lose power. Most affected are the smallest, that is Montenegro which loses 79.19%, Estonia which loses 59.53%, and Latvia, FYROM and Slovenia which lose 48.6% each. All other countries in the EU, with the exception of the four biggest and the Netherlands, record gains. This situation is extremely profitable for Luxembourg, which gains 118.4%, Malta 123%, and Cyprus 105.8%. Other countries that gain significantly are Ireland which gains 46.7%, Finland 35.9%, and Denmark 24%. Of the big countries Germany loses the most, seeing a reduction in power of 18%. So the enlargement has proved to increase the gains of the biggest members of the coalition and decrease the losses of the smallest. It has also resulted in great profits for the smallest EU countries such as Malta, and has reduced the losses of the UK, Italy and France, while it has increased the losses of Germany by 8 percentage points.

Next, assume that the Benelux countries cooperate. Column seven reveals the presence of the “paradox of size” once again, with all three countries seeing a decline in their power – the Netherlands by 4.1%, Belgium by 11.53% and Luxembourg by 84.6%. All other countries benefit, except Germany and Romania who record marginal losses. The enlargement sees the power of the coalition fall from 5.13% to 4.85%, a reduction of 5.5%. Similarly in the next column where the Scandinavian countries cooperate, the “paradox of size” brings losses of 12.17% for Sweden, 25.12% for Denmark, and 26.19% for Finland. All other countries benefit, except Germany which makes a marginal loss. The Western Balkan enlargement brings

about a decline of power for the Scandinavian coalition from 3.85% to 3.58% – a reduction of 7%.

Finally, consider the case where all coalitions take place. The EU achieves the greatest decision probability under the enlargement at 27.34%. This scenario is extremely profitable for the UK. Its power increases by 100%, making it the most powerful country in the whole of the EU, with 46% more power than Germany, which in every other case is the most powerful nation due to its large population. Austria also benefits a lot, by 36.4%. Other countries who make gains are France at 0.6%, Italy at 0.4%, Spain at 3.4%, and Poland at 3.6%. This is another illustration of the “paradox of New Members”. The rest of the countries lose. The worst affected are Malta which loses 87.47%, Luxembourg which loses 87.2%, Montenegro which loses 82%, and Cyprus which loses 77%. With the exception of Germany, which loses 6.3%, it seems that the bigger a country is, the smaller the loss. Romania for example loses the least, 1.3%. The enlargement benefits the UK, by 41 percentage points, but reduces the gains of Austria, which loses 45.6 percentage points, and Ireland, which loses 93 percentage points. Finally it reduces slightly the losses of the smallest members Malta, Luxembourg and Cyprus by at least 3 percentage points. All in all it looks like the results again suggest that it is more beneficial for countries not to form coalitions, especially if they are small. This result has not been affected by the addition of the Western Balkans.

5.Conclusion

This paper has measured the voting power of each EU member state in the Council of Ministers, and how this might change if the Western Balkan countries of Albania, Montenegro, Serbia, FYROM, Croatia, and Bosnia and Herzegovina accede to the Union. Particular attention has been paid to the cases where EU members form coalitions and cooperate with each other. Voting power has been measured using the Shapley-Shubik power index and its modifications, under two possible scenarios: accession under the rules of the Treaty of Nice, and accession under the rules of the Reform Treaty.

The results suggest that if the West Balkan countries joined under the Nice Treaty decision-making rules the workability and efficiency of the Union would deteriorate, even beyond the currently low level. This offers support for claims that

the EU should not consider further enlargements until necessary reforms in decision-making are made. In general, the enlargement would reduce the power of every EU member, although the “paradox of New Members” might occur where the power of some existing members is increased. Of all coalitions, that formed by the CEECs has the greatest voting power, and this would only be enhanced by the addition of the six new member states.

In contrast the accession of the Western Balkan countries under the Reform Treaty rules would not have much impact on the overall efficiency and ability of the Union to act in terms of decision-making. Nevertheless smaller EU states would experience substantial losses in voting power. The results also reveal the inefficiency of coalition formation between countries of dissimilar size, and the likely occurrence of the “paradox of size” where some countries are made worse off through cooperation. The enlargement would not have any effect on this outcome.

At present the timescale for the possible accession of the Western Balkan countries is uncertain. Nonetheless the analysis in this paper provides a clear idea of the likely implications of their accession, and it is important that these findings are borne in mind.

Bibliography

Algaba E., Bilbao J.M., Fernandez J.R. (2007): “The Distribution of Power in the European Constitution”, *European Journal of Operational Research* 176 (2007) 1752-1766.

Algaba E., Bilbao J.M., Fernandez J.R: “The Shapley-Shubik Index in the European Constitution Game”, paper available at <http://www.fdewb.unimaas.nl/sing/papers/EAlgaba.pdf> , accessed on 14 Feb. 2007.

Baldwin R. and Widgren M. (2005): “The Impact of Turkey’s Membership on EU Voting”, *Centre for Economic Policy Research Discussion Paper No. 4954* March 2005.

- Baldwin, R. and Widgren M. (2004):** “Council Voting in the Constitutional Treaty- Devil in the Details”, The Centre for European Policy Studies, CEPS Policy Brief No.53
- Banzhaf, John F.,III. (1965):** “Weighted Voting Doesn't Work: A Mathematical Analysis”, Rutgers Law Review 19: 317-343.
- Bobay F. (2001):** “Political Economy of the Nice Treaty: Rebalancing the EU Council”, 9th meeting of the French-German Economic Forum, CEPII Working paper 01/12
- Brams S.J. (1975):** “Game Theory and Politics”, Free Press, New York.
- Coleman J. (1971):** “Control of Collectivities and the Power of a Collectivity to Act”, in: Lieberman, B. (Ed.), Social Choice, New York: Gordon and Breach, pp. 269-99
- Council of the European Union:** “Residency Conclusions”, Brussels 23 June 2007, http://www.consilium.europa.eu/uedocs/cms_Data/docs/pressdata/en/ec/94932.pdf accessed July 8th 2007
- De Schoutheete P. (1990):** “The European Community and its Subsystems”, in W. Wallace, ed., The Dynamics of European Integration (Pinter Publishers London).
- Devuyst, Y. (2004):** “EU Decision-Making after the Treaty Establishing a Constitution for Europe”, European Convention, European Policy paper #9.
- EurActiv Website:** “Summit seals mandate for EU “Reform Treaty””, <http://www.euractiv.com/en/future-eu/summit-seals-mandate-eu-reform-treaty/article-164917> accessed July 8th 2007
- Gropas, R. (2006):** “Integrating the Balkans in the European Union: Addressing Social Capital, the Informal Economy, and Regional Cooperation Challenges in South East Europe”, ELIAMEP Hellenic Foundation for European and Foreign Policy Occasional Paper OP06.02.
- Felsenthal D.S. and Machover M. (1995):** “Postulates and Paradoxes of Relative Voting Power- a Critical Reappraisal”, Theory and Decision 38, 195-229.
- Garrett G and Tsebelis G (1999):** “Why Resist the Temptation to Apply Power Indices to the European Union?”, Journal of Theoretical Politics 11(3), pp291-308.
- Hosli M.O. (1995):** “The Balance Between Small and Large: Effects of a Double-Majority System on Voting Power in the European Union”, International Studies Quarterly, Vo.39, No 3 (Sept 1995), pp 351-370.

- Johnston R.J. (1995):** “The Conflict over Qualified Majority Voting in the European Union Council of Ministers: An analysis of the UK Negotiating Stance Using Power Indices”, *British Journal of Political Science*, Vol.25, No 2 (April 1995), pp 245-254.
- Levinsky R. and Silarszky P. (1998):** “Global Monotonicity of Values of Cooperative Games-An Argument Supporting the Explanatory Power of Shapley’s Approach”, *Homo Oeconomicus*, 2004, Vol. 20 pp473-492.
- List C. (2003):** “The Voting Power Approach: A Theory of Measurement. A Response to Max Albert”, *European Union Politics* 4(4), pp487-497.
- Moberg, A. (2002):** “The Nice Treaty and Voting Rules in the Council”, *Journal of Common Market Studies*, Vol.40 (2) pp.259-82.
- Owen G. (1977):** “Values of Games with a priory Unions”, in R. Hein and O. Moeschlin, eds., *Essays in Mathematical Economics and Game Theory* (Springer-Verlag, Berlin) 76-88.
- Paterson I. (2007):** “Voting Power Derives from the Poll Distribution. Shedding Light on Contentious Issues of Weighted Votes and the Constitutional Treaty”, *European Network of Economic Policy Research Institutes*, working paper No 50, February 2007.
- Shapley L.S. (1953):** “A Value for n-person Games”, *Ann. of Mathematical Studies* 28, pp307-317.
- Shapley L.S. and Shubik M. (1954):** “A Method for Evaluating The Distribution of Power in a Committee System”, *The American Political Science Review*, Vol 48, No 3 (Sept 1954), pp787-792.
- Silarszky P. and Levinsky R. (1999):** “Coalition Formation and Eastward Expansion of the EU- implications for the Council”, accessed online at <http://www.vwl.uni-freiburg.de/faekultaet/erwien/multimedia/pep.pdf>, accessed on Nov. 2004
- Stålvant C.E. (1990):** “Nordic Cooperation”, in W. Wallace, ed., *The Dynamics of European Integration* (Pinter Publishers London) 125-139.
- Straffin P.D. (1988):** “The Shapley Shubik and Banzhaf Power Indices as Probabilities” in Roth, A. E. (ed) *The Shapley Value: Essays in honor of Lloyd S. Shapley* (Cambridge University Press) pp71-81.
- Tiilikainen T. and Widgren M. (2002):** “Decision-Making in the EU: A Small State Perspective”, *Research Institute of the Finnish Economy (ETLA)*, accessed online at www.etla.fi/files/914_FES_02_4_decision_making.pdf, accessed on Dec 3 2004.

Tsebelis G. and Yataganas X. (2002): “Agenda Setting Power, Power Indices, and Decision-Making in the European Union”, *International Review of Law and Economics*, Vol 16 (3) pp345-61.

Tsebelis G. and Garrett G. (1995): “Agenda Setting Power, Power Indices, and Decision Making in the European Union”, *International Review of Law and Economics*, Vol. 16(3) pp345-61.

Wallace H. (1990): “Making Multilateral Negotiations Work ”, in W. Wallace, ed., *The Dynamics of European Integration* (Pinter Publishers London)

Widgren M. and Kauppi H. (2004): “What Determines EU Decision Making? Needs, Power or Both?”, *Economic Policy*, Vol. 19, No. 39, pp. 221-266, July 2004.

Winkler M.G. (1998): “Coalition-Sensitive Voting Power in the Council of Ministers: The case of the Eastern Enlargement”, *Journal of Common Market Studies*, Vol 35, No 3 (Sept 1998).

Appendix I : Tables and figures

A) Tables:

Table 2: The impact of the Western Balkans enlargement on voting power (%)

EU members	Nice Weigh	Power index before	Gap To the smallest	Power index after	Gap To the smallest
Germany	29	8.90	997	8.13	1015
France	29	8.77	982	7.95	991
UK	29	8.77	981	7.95	991
Italy	29	8.74	978	7.92	986
Spain	27	8.06	894	7.24	894
Greece	12	3.37	315	3.04	317
Portugal	12	3.37	315	3.04	317
Cyprus	4	1.08	34	0.97	34
Malta	3	0.81	0	0.73	0
Poland	27	8.04	891	7.21	889
Romania	14	3.96	388	3.58	390
Czech R.	12	3.37	315	3.04	317
Hungary	12	3.37	315	3.04	317
Bulgaria	10	2.79	244	2.51	244
Serbia	10	x	x	2.51	244
Slovakia	7	1.93	138	1.74	139
Croatia	7	x	x	1.74	139
Bosnia&Her	7	x	x	1.74	139
Lithuania	7	1.93	138	1.74	139
Albania	7	x	x	1.73	137
Latvia	4	1.09	35	0.98	35
FYROM	4	x	x	0.98	35
Slovenia	4	1.09	35	0.98	35

Estonia	4	1.09	35	0.98	35
Montenegro	4	x	x	0.97	34
Sweden	10	2.79	244	2.52	245
Denmark	7	1.93	138	1.74	139
Finland	7	1.93	138	1.74	139
Ireland	7	1.93	138	1.74	139
Austria	10	2.79	244	2.51	245
Netherlands	13	3.68	354	3.31	355
Belgium	12	3.37	315	3.04	317
Luxembourg	4	1.08	34	0.97	34
Decision probability:	2.95%			1.94%	
Winning coalitions	3,957,782			166,296,254	

Table3: Voting power in the EU27 and the coalitions between member states (%)

EU members	Nice Weight	No Coalitions Index	Franco-German Coalition Index	loss	Mediterranean Coalition Index	loss	CEECs Coalition Index	loss	Mediterranean Coalition without Italy Index	loss	Scandinavian Coalition Index	loss	BENELUX Coalition Index	loss	All Coalitions Index	loss
Germany	29	8.90	10.09	-13.41	7.91	11.14	7.86	11.64	8.70	2.20	8.89	0.08	8.90	-0.25	6.55	26.40
France	29	8.77	10.09	-15.02	7.84	10.6	7.59	13.51	8.57	2.33	8.76	0.12	8.76	0.10	6.55	25.36
UK	29	8.77	8.72	0.52	7.83	10.70	7.58	13.50	8.56	2.36	8.76	0.14	8.76	0.11	8.33	4.96
Italy	29	8.74	8.72	0.19	10.53	-20.44	7.57	13.33	8.53	2.37	8.72	0.20	8.73	0.16	8.02	8.28
Spain	27	8.06	7.94	1.44	9.80	-21.59	6.86	14.92	8.85	-9.76	8.02	0.44	8.04	0.30	7.46	7.41
Greece	12	3.37	3.21	4.57	4.36	-29.40	2.68	20.28	3.93	-16.78	3.34	0.68	3.34	0.83	3.32	1.46
Portugal	12	3.37	3.21	4.57	4.36	-29.40	2.68	20.28	3.93	-16.78	3.34	0.68	3.34	0.83	3.32	1.46
Cyprus	4	1.09	1.02	6.08	1.45	-33.84	0.81	25.44	1.31	-20.83	1.09	-0.04	1.07	1.38	1.11	-1.93
Malta	3	0.81	0.76	6.17	1.09	-34.27	0.64	21.37	0.98	-21.21	0.81	-0.42	0.81	-0.16	0.83	-2.26
Poland	27	8.04	7.89	1.76	7.20	10.36	10.74	-33.66	7.79	3.00	7.99	0.50	8.0	0.38	10.89	-35.44
Romania	14	3.96	3.81	3.77	3.69	6.78	5.57	-40.65	3.83	3.31	3.94	0.49	3.91	1.29	5.64	-42.53
Czech R.	12	3.37	3.21	4.61	3.17	5.71	4.77	-41.82	3.28	2.68	3.34	0.66	3.34	0.84	4.84	-43.70
Hungary	12	3.37	3.21	4.61	3.17	5.71	4.77	-41.82	3.28	2.68	3.34	0.66	3.34	0.84	4.84	-43.70
Bulgaria	10	2.79	2.66	4.59	2.70	3.09	3.98	-42.82	2.72	2.20	2.77	0.67	2.77	0.61	4.03	-44.71
Slovakia	7	1.93	1.85	4.19	1.77	8.46	2.78	-44.61	1.85	4.28	1.93	-0.06	1.91	1.31	2.82	-46.10
Lithuania	7	1.93	1.85	4.19	1.77	8.46	2.78	-44.61	1.85	4.28	1.92	0.07	1.90	1.40	2.82	-46.53
Latvia	4	1.09	1.04	4.44	1.01	7.28	1.59	-45.82	1.05	3.88	1.09	-0.33	1.08	1.24	1.61	-47.75
Slovenia	4	1.09	1.04	4.44	1.01	7.28	1.59	-45.82	1.05	3.88	1.09	-0.33	1.08	1.24	1.61	-47.75
Estonia	4	1.09	1.03	5.35	1.01	7.28	1.59	-45.82	1.05	3.88	1.09	-0.33	1.07	1.37	1.61	-47.75
Sweden	10	2.79	2.66	4.52	2.70	3.10	2.22	20.26	2.72	2.21	2.89	-3.88	2.77	0.60	1.69	39.47
Denmark	7	1.93	1.85	4.20	1.77	8.46	1.55	19.61	1.85	4.28	2.03	-4.90	1.91	1.31	1.18	38.87
Finland	7	1.93	1.85	4.20	1.77	8.46	1.55	19.61	1.85	4.28	2.03	-4.90	1.91	1.31	1.18	38.87
Ireland	7	1.93	1.85	4.20	1.77	8.35	1.54	20.06	1.85	4.23	1.93	0	1.90	1.36	0.71	62.97
Austria	10	2.79	2.66	4.59	2.70	3.09	2.22	20.24	2.72	2.20	2.77	0.67	2.77	0.61	4.05	-45.31
Netherlands	13	3.69	3.53	4.16	3.46	6.22	2.96	19.73	3.59	2.65	3.67	0.53	3.85	-4.60	2.24	39.17
Belgium	12	3.37	3.21	4.61	3.17	5.71	2.68	20.27	3.28	2.68	3.34	0.66	3.56	-5.67	2.07	38.54
Luxembourg	4	1.08	1.02	5.94	1.01	6.93	0.81	25.33	1.04	3.75	1.08	-0.06	1.19	-9.41	0.69	36.33
Decision probability:		2.95 %		4.59%		8.79%		12.06%		5.33%		3.34%		3.48%		16.40%

Table 4: Voting power in the EU33 and coalitions between members (%)

EU member	Nice weight	No Coalitions Index	Franco-German Coalition Index	loss	Mediterranean Coalition Index	loss	CEECs Coalition Index	loss	BENELUX Coalition Index	loss	Mediterranean Coalition without Italy Index	loss	Scandinavian Coalition Index	loss	All Coalitions Index	loss
Germany	29	8.13	9.29	-14.30	7.42	8.72	7.97	1.86	8.13	0.00	7.97	1.91	8.13	0.00	6.37	21.62
France	29	7.95	9.29	-16.76	7.36	7.51	7.27	8.54	7.94	0.14	7.81	1.84	7.95	0.00	6.37	19.92
UK	29	7.95	8.08	-1.65	7.35	7.51	7.27	8.56	7.94	0.15	7.80	1.83	7.94	0.08	10.36	-30.29
Italy	29	7.92	8.08	-2.05	9.19	-16.04	7.17	9.39	7.90	0.19	7.78	1.75	7.91	0.12	7.58	4.27
Spain	27	7.24	7.16	1.11	8.55	-18.08	6.23	13.34	7.21	0.49	7.82	-7.89	7.22	0.32	7.06	2.59
Greece	12	3.04	2.91	4.33	3.80	-25.10	2.38	21.70	3.02	0.50	3.47	-14.30	3.03	0.33	3.14	-3.21
Portugal	12	3.04	2.91	4.38	3.80	-25.14	2.38	21.68	3.02	0.51	3.47	-14.33	3.03	0.34	3.14	-3.24
Cyprus	4	0.97	0.91	6.15	1.27	-30.02	0.85	12.63	0.96	1.16	1.16	-18.80	0.97	0.00	1.05	-7.26
Malta	3	0.73	0.68	6.46	0.95	-30.37	0.64	12.63	0.73	0.53	0.87	-19.10	0.73	0.00	0.78	-7.54
Poland	27	7.21	7.06	2.05	6.75	6.36	8.44	-17.05	7.17	0.58	7.05	2.27	7.19	0.36	8.24	-14.31
Romania	14	3.58	3.44	3.80	3.42	4.23	4.38	-22.39	3.55	0.71	3.51	1.97	3.56	0.32	4.27	-19.52
Czech R.	12	3.04	2.90	4.39	2.86	5.84	3.75	-23.52	3.02	0.51	2.96	2.49	3.03	0.35	3.66	-20.63
Hungary	12	3.04	2.90	4.39	2.86	5.81	3.75	-23.59	3.02	0.53	2.96	2.49	3.02	0.37	3.66	-20.69
Bulgaria	10	2.51	2.39	4.75	2.40	4.55	3.13	-24.56	2.50	0.39	2.46	2.04	2.50	0.47	3.05	-21.64
Serbia	10	2.51	2.39	4.75	2.40	4.55	3.13	-24.56	2.50	0.39	2.46	2.04	2.50	0.47	3.05	-21.64
Slovakia	7	1.74	1.66	4.96	1.66	4.75	2.19	-25.60	1.74	0.41	1.71	2.10	1.73	0.49	2.14	-22.66
Croatia	7	1.74	1.65	5.14	1.66	4.69	2.19	-25.85	1.73	0.47	1.70	2.08	1.73	0.48	2.14	-22.91
Bosnia&Her.	7	1.74	1.64	5.31	1.66	4.72	2.19	-26.00	1.73	0.50	1.70	2.11	1.73	0.50	2.14	-23.04
Lithuania	7	1.74	1.64	5.37	1.66	4.71	2.19	-26.12	1.73	0.50	1.70	2.14	1.73	0.52	2.14	-23.16
Albania	7	1.73	1.64	5.51	1.66	4.71	2.19	-26.22	1.72	0.52	1.70	2.13	1.72	0.52	2.14	-23.26
Latvia	4	0.98	0.93	5.28	0.94	4.49	1.25	-27.48	0.97	1.04	0.96	2.32	0.98	0.00	1.22	-24.49
FYROM	4	0.98	0.93	5.28	0.94	4.49	1.25	-27.48	0.97	1.04	0.96	2.32	0.98	0.00	1.22	-24.49
Slovenia	4	0.98	0.93	5.28	0.94	4.49	1.25	-27.48	0.97	1.04	0.96	2.32	0.98	0.00	1.22	-24.49
Estonia	4	0.98	0.92	5.65	0.93	4.48	1.25	-27.91	0.97	1.08	0.95	2.32	0.97	0.50	1.22	-24.91
Montenegro	4	0.97	0.91	6.21	0.93	4.47	1.25	-28.41	0.96	1.16	0.95	2.28	0.97	0.00	1.22	-25.40
Sweden	10	2.52	2.40	4.52	2.40	4.59	1.98	21.28	2.51	0.34	2.46	2.01	2.61	-3.76	2.23	11.26
Denmark	7	1.74	1.66	4.96	1.66	4.75	1.43	18.18	1.74	0.41	1.71	2.10	1.83	-4.87	1.56	10.32
Finland	7	1.74	1.65	5.00	1.66	4.75	1.42	18.35	1.73	0.42	1.71	2.10	1.83	-4.9	1.56	10.29
Ireland	7	1.74	1.64	5.31	1.65	4.72	1.40	19.17	1.73	0.50	1.70	2.11	1.73	0.50	0.36	79.44
Austria	10	2.51	2.40	4.57	2.40	4.54	1.96	21.99	2.50	0.36	2.46	2.03	2.50	0.42	0.36	85.79
Netherlands	13	3.31	3.18	3.91	3.12	5.97	2.60	21.44	3.45	-4.04	3.23	2.58	3.30	0.40	2.40	27.54
Belgium	12	3.04	2.90	4.38	2.86	5.84	2.38	21.66	3.18	-4.80	2.96	2.49	3.03	0.35	2.22	27.01
Luxembourg	4	0.97	0.91	6.35	0.93	4.47	0.85	13.00	1.06	-9.00	0.95	2.28	0.97	0.00	0.74	24.08
Decision probability:		1.94%		3.10%		6.27%		16.77%		2.34%		3.72 %		2.23%		18.36%

Table 5: Impact of Western Balkan Enlargement on voting power (%)

EU countries	Population weight	Power index before	Gap to the smallest	Power index after	Gap To the smallest
Germany	82.4	16.21	2082	15.66	2676
France	60.7	11.10	1393	10.74	1802
UK	60.4	11.03	1384	10.67	1792
Italy	58.1	10.55	1320	10.22	1712
Spain	40.3	7.13	860	6.89	1120
Greece	11.0	2.40	223	2.18	286
Portugal	10.6	2.33	214	2.12	275
Cyprus	0.8	0.80	8	0.62	11
Malta	0.4	0.74	0	0.56	0
Poland	38.6	6.85	822	6.61	1071
Romania	22.3	4.26	474	4.02	612
Czech R.	10.2	2.27	205	2.06	264
Hungary	10.0	2.24	201	2.02	259
Bulgaria	7.5	1.84	148	1.64	190
Serbia	7.5	x	x	1.64	190
Slovakia	5.4	1.51	103	1.32	133
Croatia	4.4	x	x	1.16	106
Bosnia&Her	4.0	x	x	1.10	96
Lithuania	3.6	1.23	66	1.04	85
Albania	3.2	x	x	0.98	74
Latvia	2.0	0.99	33	0.80	42
Slovenia	2.0	0.99	33	0.80	42
FYROM	2.0	x	x	0.80	42
Estonia	1.4	0.90	21	0.71	26
Montenegro	0.4	x	x	0.59	5
Sweden	9.0	2.08	180	1.87	231
Denmark	5.4	1.51	103	1.32	133
Finland	5.2	1.48	99	1.28	128
Ireland	4.0	1.30	75	1.10	96
Austria	8.2	1.95	163	1.75	209
Netherlands	16.4	3.27	340	3.04	438
Belgium	10.4	2.30	210	2.09	270
Luxembourg	0.5	0.76	2	0.58	3
Decision probability:		12.88%		12.04%	
Winning coalitions:		17,293,669		1,034,097,903	

Table 6: Power in the EU27 and coalitions between members

EU countries	Population weight	No Coalitions Index	Franco-German Coalition Index	loss	Mediterranean Coalition Index	loss	CEECs Coalition Index	loss	BENELUX Coalition Index	loss	Mediterranean Coalition Without Italy Index	loss	Scandinavian Coalition Index	loss	All Coalitions Index	loss
Germany	82.4	16.21	18.64	-14.98	13.84	14.59	14.43	10.99	16.14	0.42	15.78	2.64	16.22	-0.07	15.90	1.88
France	60.7	11.09	13.73	-23.79	10.53	5.08	10.67	3.83	11.11	-0.20	10.72	3.30	11.12	-0.27	11.72	-5.63
UK	60.4	11.03	8.32	24.58	10.49	4.85	10.61	3.80	11.05	-0.22	10.66	3.30	11.60	-0.30	17.62	-59.79
Italy	58.1	10.55	8.03	23.85	11.78	-11.68	10.15	3.74	10.58	-0.25	10.18	3.48	10.58	-0.33	10.73	-1.70
Spain	40.3	7.13	6.05	15.14	8.17	-14.56	7.08	0.77	7.22	-1.24	7.17	-0.53	7.20	-0.86	7.44	-4.33
Greece	11.0	2.40	2.40	0.00	2.23	6.95	2.80	-16.95	2.44	-1.80	1.96	18.35	2.45	-2.28	2.03	15.27
Portugal	10.6	2.33	2.33	0.00	2.15	7.79	2.74	-17.42	2.38	-1.95	1.89	19.09	2.39	-2.42	1.96	16.03
Cyprus	0.8	0.80	1.08	-33.62	0.16	79.83	1.25	-55.16	0.87	-8.73	0.14	82.31	0.87	-7.85	0.15	81.63
Malta	0.4	0.74	1.02	-37.53	0.08	89.08	1.19	-60.69	0.81	-9.61	0.07	90.42	0.81	-8.68	0.07	90.06
Poland	38.6	6.85	5.88	14.18	6.46	5.69	8.04	-17.38	6.94	-1.30	6.94	-1.32	6.91	-0.84	6.60	3.63
Romania	22.3	4.26	4.00	6.09	4.22	0.97	4.65	-9.00	4.29	-0.61	4.61	-8.14	4.29	-0.63	3.81	10.51
Czech R.	10.2	2.27	2.28	-0.48	2.40	-5.61	2.13	6.32	2.32	-2.06	2.48	-9.27	2.32	-2.47	1.75	23.09
Hungary	10.0	2.24	2.25	-0.63	2.37	-5.77	2.08	6.93	2.29	-2.16	2.45	-9.36	2.30	-2.55	1.71	23.59
Bulgaria	7.5	1.84	1.94	-5.18	2.02	-9.93	1.56	15.07	1.89	-2.84	2.04	-10.87	1.90	-2.96	1.28	30.27
Slovakia	5.4	1.51	1.66	-9.75	1.73	-14.74	1.13	25.55	1.57	-3.94	1.71	-13.33	1.56	-3.12	0.92	38.87
Lithuania	3.6	1.23	1.42	-15.02	1.49	-20.92	0.75	39.23	1.30	-5.15	1.43	-16.26	1.29	-4.55	0.62	50.11
Latvia	2.0	0.99	1.23	-23.99	1.28	-29.66	0.42	57.86	1.05	-6.66	1.18	-19.43	1.05	-6.22	0.34	65.39
Slovenia	2.0	0.99	1.23	-23.99	1.28	-29.66	0.42	57.86	1.05	-6.66	1.18	-19.43	1.05	-6.22	0.34	65.39
Estonia	1.4	0.90	1.15	-28.10	1.20	-33.55	0.29	67.51	0.96	-7.50	1.09	-21.65	0.96	-7.26	0.24	73.33
Sweden	9.0	2.08	2.12	-2.27	2.22	-7.02	2.50	-20.25	2.13	-2.35	2.29	-10.05	1.77	14.91	1.97	5.23
Denmark	5.4	1.51	1.66	-9.75	1.73	-14.74	1.85	-22.59	1.57	-3.94	1.71	-13.33	1.06	29.85	1.18	21.86
Finland	5.2	1.48	1.63	-10.47	1.70	-14.87	1.82	-23.04	1.54	-4.09	1.68	-13.43	1.02	30.95	1.13	23.10
Ireland	4.0	1.30	1.47	-13.36	1.54	-19.06	1.70	-30.97	1.36	-4.94	1.50	-15.23	1.35	-4.00	1.67	-28.53
Austria	8.2	1.95	2.03	-3.80	2.12	-8.54	2.40	-22.86	2.00	-2.67	2.16	-10.66	2.00	-2.84	3.57	-82.98
Netherlands	16.4	3.27	3.14	4.01	3.29	-0.79	3.46	-5.93	3.08	5.65	3.52	-7.68	3.30	-1.13	3.15	3.66
Belgium	10.4	2.30	2.30	-0.14	2.42	-5.28	2.70	-17.55	1.95	15.02	2.51	-9.10	2.36	-2.50	2.00	13.23
Luxembourg	0.5	0.76	1.03	-36.20	1.07	-41.93	1.20	-58.08	0.09	87.59	0.95	-25.47	0.82	-8.43	0.10	87.33
Decision probability:		12.89%	17.78%		16.63%		16.77%		13.15%		13.52%		13.12%		26.56%	

Table 7: Power in the EU33 and coalitions between members (%)

EU countries	Population weight	No Coalitions Index	Franco-German Coalition Index	loss	Mediterranean Coalition Index	loss	CEECS Coalition Index	loss	BENELUX Coalition Index	loss	Mediterranean Coalition Without Italy Index	loss	Scandinavian Coalition Index	loss	All Coalitions Index	loss
Germany	82.4	15.66	17.07	-8.99	13.38	14.59	12.73	18.75	15.62	0.27	15.21	2.93	15.66	0.01	14.67	6.35
France	60.7	10.74	12.58	-17.16	10.18	5.21	10.39	3.24	10.74	-0.01	10.41	3.01	10.75	-0.13	10.81	-0.67
UK	60.4	10.67	7.46	30.13	10.14	5.00	10.35	3.03	10.68	-0.03	10.35	3.02	10.69	-0.14	21.43	-100.7
Italy	58.1	10.22	7.23	29.27	11.51	-12.58	10.10	1.21	10.23	-0.08	9.90	3.13	10.25	-0.20	10.27	-0.46
Spain	40.3	6.89	5.59	18.90	7.98	-15.95	7.68	-11.49	6.95	-0.86	6.95	-0.97	6.93	-0.60	7.13	-3.47
Greece	11.0	2.18	2.18	0.27	2.18	0.07	2.35	-7.68	2.21	-1.17	1.90	12.98	2.21	-1.22	1.95	10.83
Portugal	10.6	2.12	2.13	-0.55	2.10	0.82	2.31	-9.21	2.14	-1.25	1.83	13.63	2.14	-1.25	1.87	11.49
Cyprus	0.8	0.62	1.06	-69.64	0.16	74.59	1.28	-105.8	0.66	-6.56	0.14	77.88	0.66	-6.20	0.14	77.33
Malta	0.4	0.56	1.02	-80.10	0.08	85.96	1.26	-123.1	0.61	-7.28	0.07	87.78	0.60	-6.89	0.07	87.47
Poland	38.6	6.61	5.45	17.62	6.06	8.29	7.95	-20.33	6.67	-0.94	6.61	-0.05	6.65	-0.66	6.85	-3.69
Romania	22.3	4.02	3.54	11.74	3.83	4.61	4.60	-14.44	3.99	0.55	4.23	-5.41	4.02	-0.08	3.96	1.39
Czech R.	10.2	2.06	2.08	-1.36	2.09	-1.45	2.10	-2.26	2.08	-1.30	2.18	-6.06	2.10	-1.29	1.81	11.89
Hungary	10.0	2.02	2.06	-1.83	2.06	-1.64	2.06	-1.79	2.05	-1.35	2.15	-6.12	2.06	-1.34	1.78	12.29
Bulgaria	7.5	1.64	1.78	-8.65	1.72	-4.92	1.55	5.59	1.67	-1.91	1.76	-7.37	1.67	-1.89	1.33	18.65
Serbia	7.5	1.64	1.78	-8.65	1.72	-4.92	1.55	5.59	1.67	-1.91	1.76	-7.37	1.67	-1.89	1.33	18.65
Slovakia	5.4	1.32	1.55	-17.81	1.44	-9.38	1.11	15.45	1.35	-2.54	1.43	-9.03	1.35	-2.59	0.96	27.14
Croatia	4.4	1.16	1.44	-23.84	1.31	-12.41	0.91	22.10	1.20	-3.02	1.28	-10.15	1.20	-2.90	0.78	32.88
Bosnia&Her.	4.0	1.10	1.40	-26.78	1.26	-13.84	0.82	25.32	1.14	-3.24	1.22	-10.74	1.14	-3.08	0.71	35.65
Lithuania	3.6	1.04	1.36	-30.00	1.21	-15.52	0.74	28.90	1.08	-3.48	1.16	-11.42	1.08	-3.32	0.64	38.73
Albania	3.2	0.98	1.31	-33.67	1.15	-17.19	0.66	32.93	1.02	-3.74	1.10	-12.06	1.02	-3.61	0.57	42.21
Latvia	2.0	0.80	1.18	-47.48	1.00	-24.19	0.41	48.66	0.84	-4.82	0.92	-14.80	0.84	-4.61	0.36	55.76
FYROM	2.0	0.80	1.18	-47.48	1.00	-24.19	0.41	48.66	0.84	-4.82	0.92	-14.80	0.84	-4.61	0.36	55.76
Slovenia	2.0	0.80	1.18	-47.48	1.00	-24.19	0.41	48.66	0.84	-4.82	0.92	-14.80	0.84	-4.61	0.36	55.76
Estonia	1.4	0.71	1.12	-57.17	0.92	-29.00	0.29	59.54	0.75	-5.55	0.83	-16.76	0.75	-5.34	0.25	65.15
Montenegro	0.6	0.59	1.04	-74.60	0.82	-37.66	0.12	79.19	0.64	-6.94	0.71	-20.13	0.63	-6.52	0.11	82.07
Sweden	9.0	1.87	1.95	-4.29	1.93	-2.94	2.15	-15.18	1.90	-1.54	1.99	-6.50	1.64	12.17	1.09	41.54
Denmark	5.4	1.32	1.55	-17.81	1.44	-9.38	1.76	-34.09	1.35	-2.54	1.43	-9.03	0.99	25.13	0.66	50.23
Finland	5.2	1.29	1.53	-18.96	1.41	-9.87	1.75	-35.93	1.32	-2.62	1.40	-9.23	0.95	26.20	0.63	50.91
Ireland	4.0	1.10	1.40	-26.78	1.26	-13.84	1.62	-46.71	1.14	-3.24	1.22	-10.74	1.14	-3.08	0.71	35.28
Austria	8.2	1.75	1.86	-6.50	1.81	-3.90	2.06	-17.79	1.78	-1.76	1.87	-6.96	1.78	-1.70	2.38	-36.41
Netherlands	16.4	3.04	2.81	7.37	2.96	2.38	2.95	2.80	2.91	4.15	3.20	-5.39	3.06	-0.79	2.43	19.94
Belgium	10.4	2.09	2.11	-0.95	2.11	-1.28	2.30	-10.04	1.85	11.53	2.21	-6.05	2.11	-1.27	1.54	26.10
Luxembourg	0.5	0.58	1.03	-77.31	0.80	-39.00	1.26	-118.4	0.09	84.68	0.70	-20.62	0.62	-6.72	0.07	87.20
Decision probability:		12.4%	13.26%		15.60%		17.52%		12.25%		12.60%		12.23%		27.34%	

B) Figures:

Figure 1: The impact of the Enlargement on voting power under the Nice Treaty rules

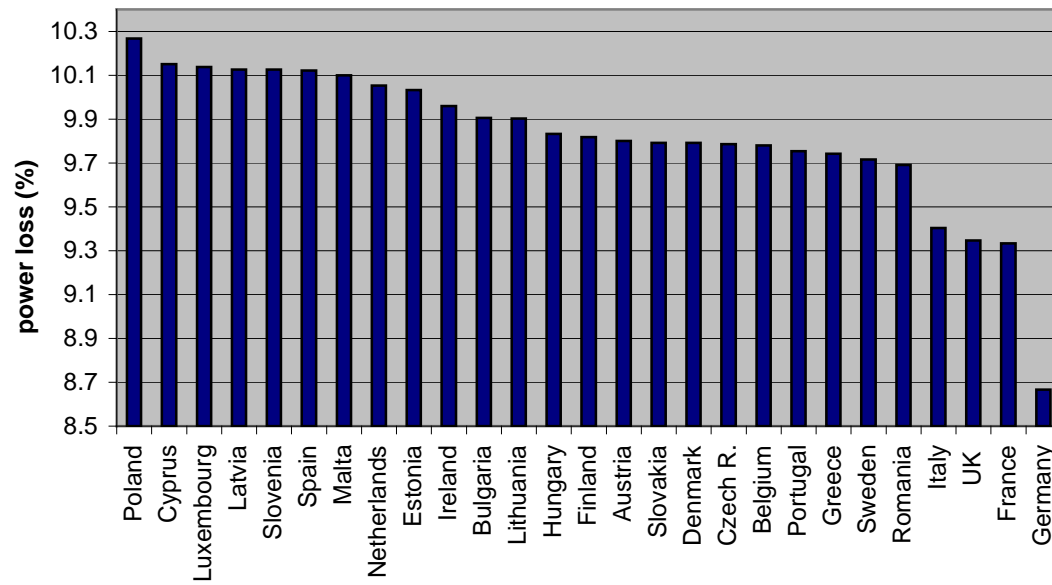
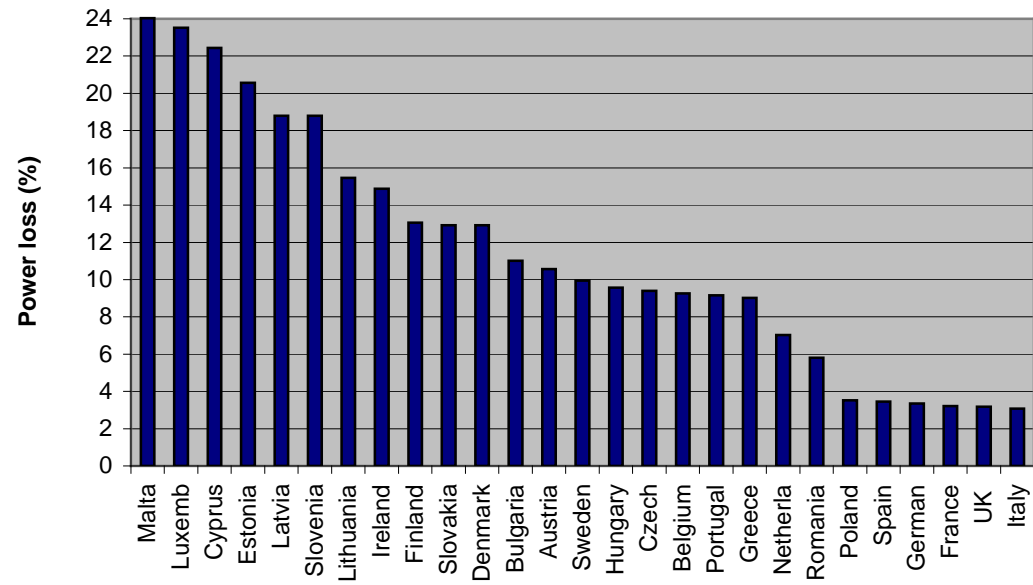


Figure2: The impact of Enlargement on voting power under the Reform Treaty rules



Appendix II

Sometimes, especially when considering double majority systems such as the Reform Treaty rules, the voting power estimates obtained by SSI and the Banzhaf (BNZ) power indices can vary considerably. This is illustrated in the following two tables. Using IOP the following results were obtained for the EU27:

A) Under the Reform Treaty Rules and assuming no a priori coalitions table 8 reveals that in comparison to the SSI, the BNZ power index systematically underestimates the voting power of the bigger EU states whereas it overestimates the voting power of the smaller states.

Table 8: Comparison between the SSI and normalised BNZ power indices (%)

EU countries	Population weight	SSI Power index	BNZ Power index	Difference SSI-BNZ Percentage points
Germany	82.4	16.21	11.77	4.44
France	60.7	11.10	8.83	2.27
UK	60.4	11.03	8.79	2.24
Italy	58.1	10.55	8.50	2.05
Spain	40.3	7.13	6.18	0.95
Greece	11.0	2.40	2.87	-0.47
Portugal	10.6	2.33	2.82	-0.49
Cyprus	0.8	0.80	1.63	-0.83
Malta	0.4	0.74	1.59	-0.85
Poland	38.6	6.85	5.93	0.92
Romania	22.3	4.26	4.25	0.01
Czech R.	10.2	2.27	2.77	-0.5
Hungary	10.0	2.24	2.75	-0.51
Bulgaria	7.5	1.84	2.45	-0.61
Slovakia	5.4	1.51	2.19	-0.68
Lithuania	3.6	1.23	1.97	-0.74
Latvia	2.0	0.99	1.78	-0.79
Slovenia	2.0	0.99	1.78	-0.79
Estonia	1.4	0.90	1.71	-0.81
Sweden	9.0	2.08	2.63	-0.55
Denmark	5.4	1.51	2.19	-0.68
Finland	5.2	1.48	2.17	-0.69
Ireland	4.0	1.30	2.02	-0.72
Austria	8.2	1.95	2.53	-0.58
Netherlands	16.4	3.27	3.52	-0.25
Belgium	10.4	2.30	2.80	-0.5
Luxembourg	0.5	0.76	1.60	-0.84

B) Under the Nice Treaty Rules and assuming no a priori coalitions table 9 reveals that in comparison to the SSI, the BNZ power index (although to a much lesser extent when

compared to the above case) underestimates the voting power of the bigger EU states whereas it overestimates the voting power of the smaller states.

Table 9: Comparison between the SSI and normalised BNZ power indices (%)

EU members	Nice Weigh	SSI Power index	BNZ Power index	Difference SSI-BNZ Percentage points
Germany	29	8.90	7.91	0.99
France	29	8.77	7.91	0.86
UK	29	8.77	7.91	0.86
Italy	29	8.74	7.91	0.83
Spain	27	8.06	7.51	0.55
Greece	12	3.37	3.64	-0.27
Portugal	12	3.37	3.64	-0.27
Cyprus	4	1.08	1.24	-0.16
Malta	3	0.81	0.92	-0.11
Poland	27	8.04	7.51	0.53
Romania	14	3.96	4.22	-0.26
Czech R.	12	3.37	3.64	-0.27
Hungary	12	3.37	3.64	-0.27
Bulgaria	10	2.79	3.05	-0.26
Slovakia	7	1.93	2.15	-0.22
Lithuania	7	1.93	2.15	-0.22
Latvia	4	1.09	1.24	-0.15
Slovenia	4	1.09	1.24	-0.15
Estonia	4	1.09	1.24	-0.15
Sweden	10	2.79	3.05	-0.26
Denmark	7	1.93	2.15	-0.22
Finland	7	1.93	2.15	-0.22
Ireland	7	1.93	2.15	-0.22
Austria	10	2.79	3.05	-0.26
Netherlands	13	3.68	3.93	-0.25
Belgium	12	3.37	3.64	-0.27
Luxembourg	4	1.08	1.24	-0.16